Comprehensive Remedial Investigation/Feasibility Study for the Central Facilities Area Operable Unit 4-13 at the Idaho National Engineering and Environmental Laboratory

1. INTRODUCTION

The Department of Energy Idaho Operations Office (DOE-ID) is conducting a remedial investigation and feasibility study (RI/FS) for the 12 operable units (OUs) containing 52 potential release sites at the Central Facilities Area (CFA) of the Idaho National Engineering and Environmental Laboratory (INEEL) in southeastern Idaho. This investigation is being conducted in accordance with a *Federal Facility Agreement and Consent Order* (FFA/CO) among the Environmental Protection Agency (EPA) Region 10, the State of Idaho Department of Health and Welfare (IDHW), and DOE-ID under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA).

CFA is included as Waste Area Group (WAG) 4 of the ten INEEL WAGs identified in the FFA/CO. The sites include landfills, spills, ponds, underground storage tanks (USTs), drywells, and a sewage treatment plant. The CFA release sites within each OU are illustrated in Appendix A. Detailed descriptions of each site are provided in Section 3.3 of the *Work Plan for Waste Area Group 4 Operable Unit 4-13 Comprehensive Remedial Investigation/Feasibility Study* (McCormick et al. 1997); hereafter referred to as the *RI/FS Work Plan*. The FFA/CO investigations and resulting decisions for the WAG 4 sites based on the initial human health risk assessment screen conducted in the Work Plan are summarized in Table 1-1. Note that a separate screen was conducted for the ecological risk assessment which is described in Section 7 of this RI/FS.

1.1 Purpose and Objective

OU 4-13 is defined in the FFA/CO as the WAG 4 Comprehensive RI/FS. The purpose of this investigation is to fill the data gaps identified in the *RI/FS Work Plan* (McCormick et al. 1997), define the nature and extent of the contamination, and perform a comprehensive cumulative baseline risk assessment (BRA) and an ecological risk assessment (ERA) of WAG 4.

The objectives of the comprehensive RI/FS are as follows:

1. Identify data gaps that remain following the performance of previous investigations as identified in the *RI/FS Work Plan* (McCormick et al. 1997), and develop and implement field investigations to fill the data gaps
2. Define the nature and extent of contamination at WAG 4
3. Define contaminant transport mechanisms and develop exposure scenarios
4. Determine the current and future cumulative comprehensive risk posed by the contaminants of concern to human health and the environment
5. Develop remedial action objectives and general response actions
6. Develop and evaluate the appropriate remedial alternatives based on the CERCLA criteria.

Table 1-1. Summary status of WAG 4 sites.

Operable Unit	Site Code	Site Name	FFA/CO Investigation	Documentation	Date	Direction by EPA, IDHW and DOE RPM
4-01	CFA-09	Central Gravel Pit	Interim action	ROD	6/2/92	No further action[d]
	CFA-11	French Drain (containing 5-in. shell) N. of CFA-633	Interim action	ROD	6/2/92	No further action
4-02	CFA-13	Dry Well (South of CFA-640)	Track-1	Statement[a]	2/29/96	No further action
	CFA-14	Two Dry Wells (CFA-665)	Track-1	Statement	2/29/96	No further action
	CFA-15	Dry Well (CFA-674)	Track-1	Statement	2/8/95	No further action
	CFA-16	Dry Well (South of CFA-682 Pumphouse)	Track-1	Statement	2/7/95	No further action
4-03	CFA-18	Fire Department Training Area, Oil Storage Tanks	Track-1	ROD[b]	10/10/95	No further action
	CFA-19	Gasoline Tanks (2) East of CFA-606	Track-1	ROD	10/10/95	No further action
	CFA-20	Fuel Oil Tank at CFA-609 (CFA-732)	Track-1	ROD	10/10/95	No further action
	CFA-21	Fuel Tank at Nevada Circle 1 (South by CFA-629)	Track-1	ROD	10/10/95	No further action
	CFA-22	Fuel Oil Tank at CFA-640	Track-2	Statement	3/12/97	No further action
	CFA-23	Fuel Oil Tank at CFA-641	Track-1	ROD	10/10/95	No further action
	CFA-24	Fuel Tank at Nevada Circle 2 (South by CFA-629)	Track-1	ROD	10/10/95	No further action
	CFA-25	Fuel Oil Tank at CFA-656 (North Side)	Track-1	ROD	10/10/95	No further action
	CFA-27	Fuel Oil Tank at CFA-669 (CFA-740)	Track-1	ROD	10/10/95	No further action
	CFA-28	Fuel Oil Tank at CFA-674 (West)	Track-1	ROD	10/10/95	No further action
	CFA-29	Waste Oil Tank at CFA-664, active	Track-1	ROD	10/10/95	No further action
	CFA-30	Waste Oil Tank at CFA-665, active	Track-1	ROD	10/10/95	No further action
	CFA-31	Waste Oil Tank at CFA-754, active	Track-1	ROD	10/10/95	No further action
	CFA-32	Fuel Tank at CFA-667 (North Side)	Track-1	ROD	10/10/95	No further action
	CFA-33	Fuel Tank at CFA-667 (South Side)	Track-1	ROD	10/10/95	No further action

Table 1-1. (continued).

Operable Unit		Site Code	Site Name	FFA/CO Investigation	Documentation	Date	Direction by EPA, IDHW and DOE RPM
		CFA-34	Diesel Tank at CFA-674 (South)	Track-1	ROD	10/10/95	No further action
		CFA-35	Sulfuric Acid Tank at CFA-674 (West Side)	Track-1	ROD	10/10/95	No further action
		CFA-36	Gasoline Tank at CFA-680	Track-1	ROD	10/10/95	No further action
		CFA-37	Diesel Tank at CFA-681 (South Side)	Track-1	ROD	10/10/95	No further action
		CFA-38	Fuel Oil Tank, CFA-683	Track-1	ROD	10/10/95	No further action
	*	CFA-45	Underground Storage Tank	Track-2	Statement	3/12/97	No further action
4-04		CFA-39	"Drum Dock" (CFA-771)	Track-1	Statement	10/26/94	No further action
		CFA-40	Returnable Drum Storage—South of CFA-601	Track-1	Statement	5/23/96	No further action
		CFA-41	Excess Drum Storage—South of CFA-674	Track-1	Statement	5/23/96	No further action
4-05		CFA-04	Pond (CFA-674)	Track-2	Statement	3/12/97	RI/FS[c]
		CFA-17	Fire Department Training Area, bermed	Track-2	Statement	3/12/97	RI/FS (BRA)[c]
	*	CFA-47	Fire Station Chemical Disposal	Track-2	Statement	3/12/97	RI/FS (BRA)[c]
	*	CFA-50	Shallow Well East of CFA-654	Track-1/ Track-2	Statement	3/12/97	No further action
4-06		CFA-06	Lead Shop (outside areas)	Track-2	Statement	5/23/96	RI/FS/Removal action
		CFA-43	Lead Storage Area	Track-2	Statement	5/23/96	RI/FS/Removal action
		CFA-44	Spray Paint Booth Drain (CFA-654)	Track-2	Statement	5/23/96	RI/FS
4-07		CFA-07	French Drains E/S (CFA-633)	Track-1/ Track-2	Statement	3/12/97	RI/FS(BRA)[c]
		CFA-12	French Drains (2) (CFA-690)	Track-1/ Track-2	Statement	3/12/97	RI/FS(BRA)[c] (south drain only) No further action (north drain)
	*	CFA-48	Chemical Washout South of CFA-633	Track-2	Statement	3/12/97	No further action
4-08		CFA-08	Sewage Plant (CFA-691), Septic Tanks (CFA-716) and Drainfield	Track-2	Statement	5/23/96	RI/FS

Table 1-1. (continued).

Operable Unit		Site Code	Site Name	FFA/CO Investigation	Documentation	Date	Direction by EPA, IDHW and DOE RPM
	*	CFA-49	Hot Laundry Drain Pipe	Track-2	Statement	5/23/96	RI/FS
4-09		CFA-10	Transformer Yard Oil Spills	Track-2	Statement	3/12/97	RI/FS (BRA)[e]
		CFA-26	CFA-760 Pump Station Fuel Spill	Track-2	Statement	3/12/97	RI/FS (BRA)[e]
		CFA-42	Tank Farm Pump Station Spills	Track-2	Statement	3/12/97	RI/FS (BRA)[e]
	*	CFA-46	Cafeteria Oil Tank Spill (CFA-721)	Track-2	Statement	3/12/97	RI/FS (BRA)[e]
4-10		CFA-01	Landfill I	Track-2	Statement	10/20/93	OU 4-12 RI/FS
4-11		CFA-05	Motor Pool Pond	RI/FS	ROD	12/31/92	No further action
4-12		CFA-01	Landfill I	RI/FS	ROD	10/10/95	Remedial action
		CFA-02	Landfill II	RI/FS	ROD	10/10/95	Remedial action
		CFA-03	Landfill III	RI/FS	ROD	10/10/95	Remedial action
4-13	*	CFA-51	Drywell at North end of CFA-640	RI/FS	New Site Identification[c]	4/96	RI/FS (BRA)[e]
	*	CFA-52	Diesel Fuel UST (CFA-730) at Bldg CFA-613 Bunkhouse	RI/FS	New Site Identification	4/96	RI/FS (BRA)[e]

* These sites were added to the FFA/CO using the new site identification process.

a. A decision statement regarding future action at a Track 1 or Track 2 site.

b. The final decision specifying the selected remedy at a site.

c. A process for adding potential release sites to the FFA/CO.

d. Based on risk.

e. Recommended for further evaluation in the RI/FS. Sites designated "BRA" will only be evaluated in the OU 4-13 RI BRA.

The first objective was addressed in the *RI/FS Work Plan* (McCormick et al. 1997). Section 3.2 of the *RI/FS Work Plan* (McCormick et al. 1997) documents the screening and data gap identification process that was performed. This process was used to screen sites and contaminants, and identify data gaps to be filled during the RI. The second, third, and fourth objectives are addressed in this baseline risk assessment (BRA). The fifth and sixth objectives are addressed in the FS.

1.2 Site Background and Regulatory History

The INEEL is a government-owned reservation managed by the U.S. Department of Energy (DOE). The eastern boundary of the INEEL is located 52 km (32 mi) west of Idaho Falls, Idaho. The INEEL site occupies approximately 2,305 km^2 (890 mi^2) of the northwestern portion of the Eastern Snake River Plain (ESRP) in southeast Idaho. The Site is nearly 62 km (39 mi) long from north to south (extreme latitudes are 43° 26′ and 44° 01′ N) and approximately 57 km (36 mi) at its broadest southern portion (extreme longitudes are 112° 28′ and 113° 9′ W). The INEEL includes portions of five Idaho counties (i.e., Bingham, Bonneville, Butte, Clark, and Jefferson) and lies within Townships 2 to 8 N and Ranges 28 to 34 E Boise meridian. Figure 1-1 illustrates the INEEL configuration and some of its major facilities.

The INEEL lands are within the aboriginal land area of the Shoshone-Bannock Tribes. The Tribes have used the land and waters within and surrounding the INEEL for fishing, hunting, plant gathering, medicinal, religious, ceremonial, and other cultural uses since time immemorial. These lands and waters have provided the Tribes their home and sustained their way of life. The record of the Tribes' aboriginal presence at the INEEL is considerable, and DOE has documented an excess of 1,500 prehistoric and historic archeological sites.

1.2.1 History of the INEEL

A portion of the current INEEL site was first used during World War II as a gunnery range for the U.S. Navy, and as an aerial gunnery range for the U.S. Army Air Corps. The former Navy administration shop, warehouse, and housing area are part of what is now known as CFA. The INEEL site was originally established in 1949 as the National Reactor Testing Station by the U.S. Atomic Energy Commission as a site for building, testing, and operating various nuclear reactors, fuel processing plants, and support facilities. In 1974, the NRTS was redesignated as the Idaho National Engineering Laboratory to reflect the broad scope of engineering activities conducted at the site. The name was again changed to the INEEL in 1997 to reflect the emphasis on environmental work.

Prior to the establishment of the National Reactor Testing Station, the land on which the INEEL is located was controlled by the U.S. Bureau of Land Management (BLM). The land was withdrawn from the public domain through a series of public land orders in 1946, 1949, and 1950. Until then, the area was used primarily as rangeland. Approximately 1,217 to 1,424 km^2 (470 to 550 mi^2) around the perimeter of the INEEL are open to grazing through permits administered through the BLM; however, since 1957 the central portion of the INEEL, which is approximately 1,385 km^2 (535 mi^2) has been maintained as a grazing exclusion area.

The remainder of the INEEL has been excluded from public access and is relatively undisturbed. The DOE has established the INEEL as a National Environmental Research Park, making it one of two such parks in the nation that allow comparative studies of ecological processes in sagebrush-steppe ecosystems.

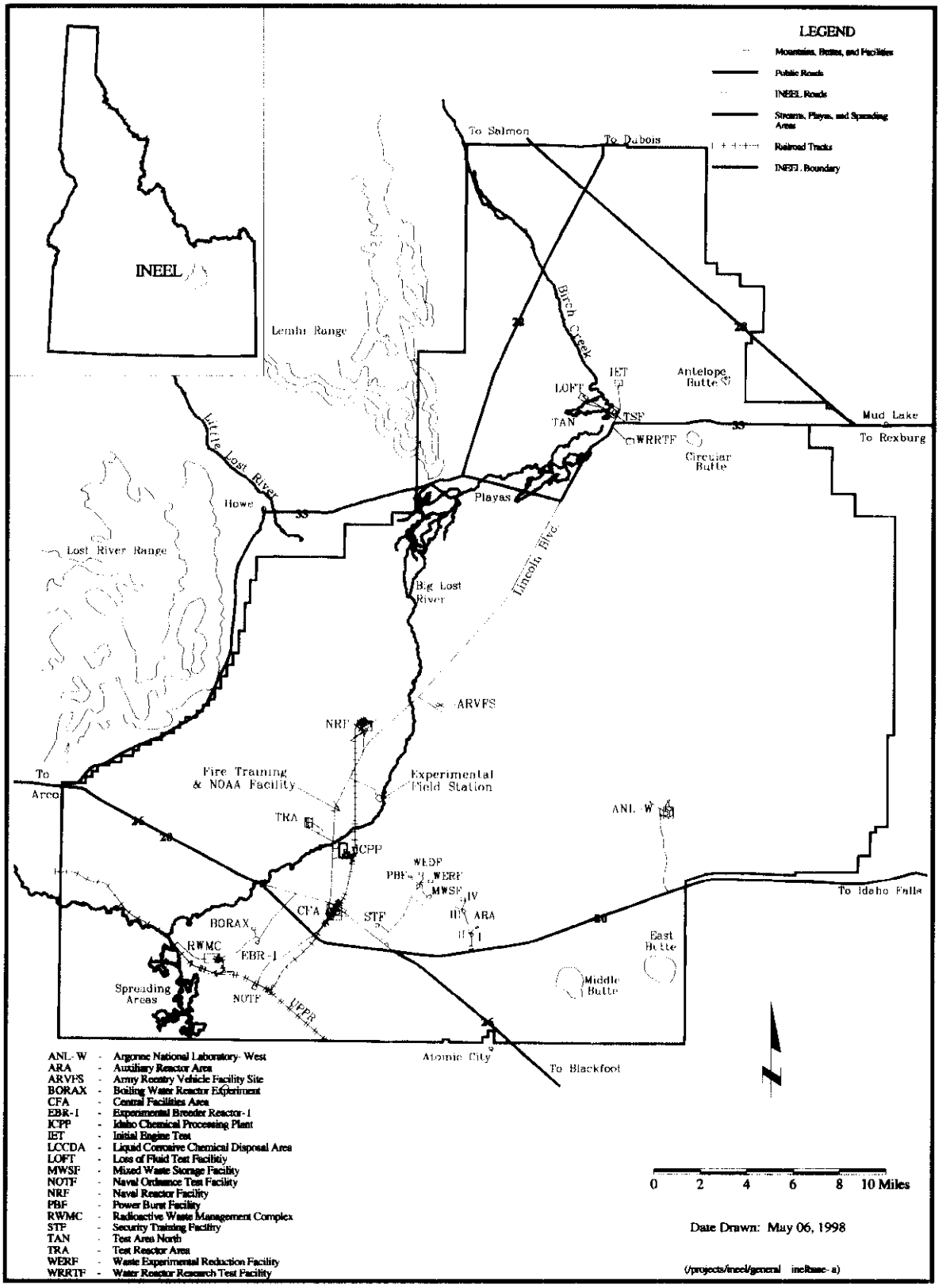

Figure 1-1. Location INEEL site map showing major facilities.

1.2.2 Regulatory History

The INEEL was added to the U.S. Environmental Protection Agency's (EPA's) National Priorities List of Superfund sites on November 21, 1989 as published in the Federal Register (54 FR 48184). A FFA/CO for the INEEL was signed by DOE-ID, EPA, and the State of Idaho in December 1991 (DOE 1991). The goal of this agreement is to ensure that potential or actual INEEL releases of hazardous substances to the environment are thoroughly investigated in accordance with the *National Oil and Hazardous Substances Pollution Contingency Plan* (NCP), and that appropriate response actions are taken as necessary to protect human health and the environment.

1.3 Overview of WAG 4

CFA is located in the south-central portion of the INEEL approximately 93 km (50 mi) from the cities of Idaho Falls and Pocatello (refer to Figure 1-1). The original facilities at CFA were built in the 1940s and 1950s to house the U.S. Navy's gunnery range personnel. The facilities have been modified over the years to fit the changing needs of the INEEL and now provide craft, office, service, and laboratory space. Approximately 820 people routinely work at CFA.

It is possible that historical releases have occurred at CFA that may not have been designated as release sites. Also, because CFA is an operational facility, the possibility exists that future operations could result in spills or other impacts to human health or the environment. All facilities at CFA were therefore evaluated (in the *RI/FS Work Plan*) for past and potential future releases to determine whether or not site contamination had occurred that was not identified in the FFA/CO, and to determine if a potential unacceptable risk associated with a facility exists. A screening process was implemented to eliminate or retain a facility for further evaluation. Nineteen facilities were retained as a result of this process (see Attachment III, DOE 1997b).

1.4 Report Organization

The organization of this report generally follows the suggested format provided in *EPA Guidance* (EPA 1988). This report summarizes previous reports and provides new information obtained during the field investigations and the results of the Comprehensive BRA. This report is sectioned as follows:

- Section 1 summarizes CFA investigations at WAG 4 through the completion of this RI/BRA
- Section 2 describes the physical setting of WAG 4
- Section 3 discusses the OU 4-13 field investigations, and removal actions
- Section 4 discusses the analytical data, the nature and extent of contamination at each site retained for the human health risk assessment, and analyzes CFA facilities
- Section 5 discusses deviations from the *RI/FS Work Plan* (McCormick et al. 1997)
- Section 6 presents the BRA for individual sites and a comprehensive risk assessment for the entire WAG 4
- Section 7 presents the ecological risk evaluation for WAG 4

- Section 8 presents risk management considerations and conclusions based on the comprehensive evaluation of the BRA and sampling data
- Section 9 presents the development of remedial action objectives and general response actions
- Section 10 presents the development alternatives
- Section 11 presents the screening and alternatives
- Section 12 presents the detailed analysis of alternatives.

The appendices include OU 4-13 analytical data, documentation to support the human health and ecological risk assessments, a guide to locate the information required for a Natural Resources Damage Preassessment Screening, and cost estimates for cleanup.

1.5 References

40 CFR 300, July 1997, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*, U.S. Government Printing Office.

54 FR 48184, 40 CFR 300, July 1997, "National Priorities List of Superfund Sites," *Code of Federal Regulations*, Final Rule, U.S. Government Printing Office.

DOE-ID, 1991, *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory*, 1088-06-29-120, U.S. Department of Energy, Idaho Field Office, U.S. Environmental Protection Agency, Region 10; State of Idaho, Department of Health and Welfare, December.

Environmental Protection Agency, 1988, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA,* Interim Final, EPA/540/G-89/0004, October 1988.

McCormick, S. H., et al., 1997, *Work Plan for Waste Area Group 4, Operable Unit 4-13 Comprehensive Remedial Investigation/Feasibility Study*, DOE/ID-10550, March 1997.

U.S. Environmental Protection Agency, "Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)," Title 42, Chapter 103, *United States Code*, s/s 9601 et seq., 1980.